INITIAL

NAVY TRAINING SYSTEM PLAN

FOR THE

AN/FSQ-204 STANDARD TERMINAL AUTOMATION REPLACEMENT SYSTEM

FEBRUARY 2000

February 2000

STANDARD TERMINAL AUTOMATION REPLACEMENT SYSTEM

EXECUTIVE SUMMARY

This Initial Navy Training System Plan for the AN/FSQ-204 Standard Terminal Automation Replacement System (STARS) was developed by the Naval Air Systems Command (AIR 3.4.1.1) using the Training Planning Process Methodology. It provides an early estimate of the manpower, personnel, and training requirements to support STARS. This document also contains pertinent information and data required to make accurate decisions pertaining to training and manning alternatives.

STARS is an Acquisition Category I-C program. Milestone (MS) 0 was completed 13 November 1992, MS I was completed 5 November 1994, and MS II was completed 24 July 1995. A Milestone III decision is scheduled for March 2001. The Federal Aviation Administration (FAA) and the Department of Defense (DoD) are using parallel development programs with timelines that differ for Initial Operational Capability (IOC). The difference stems from nomenclature of events. The FAA plans an Early Display model IOC at El Paso, Texas, scheduled for FY00, but Full Service IOC is not scheduled until FY02. The DoD IOC is scheduled for FY01 at the Norfolk, Virginia, facility. Installation of STARS is scheduled to begin during FY01.

Raytheon Electronic Systems and the FAA are currently providing initial operator and maintenance training for Operational Evaluation (OPEVAL), Technical Evaluation (TECHEVAL), and installation team members. OPEVAL and TECHEVAL will be conducted at Eglin Air Force Base, Florida, for the DoD.

STARS will be operated by Navy personnel in the Air Traffic Controller (AC) rating and Marine Corps Air Traffic Controllers with Military Occupational Specialty (MOS) 7257 and 7291 as well as Department of Defense civilian controllers. STARS instruction will be added to the curriculum of the two existing operator training courses, C-222-2010 Air Traffic Controller, and C-222-2022 Advanced Radar Air Traffic Control. Both courses are taught at Naval Air Technical Training Center (NATTC) Pensacola, Florida.

Maintenance of STARS will be performed at two levels: organizational and depot. Navy personnel in the Electronics Technician (ET) rating, Marine Corps Air Traffic Control (MATC) technicians, or civilian Ground Electronics Maintenance Division (GEMD) technicians will perform organizational level maintenance. A new, stand-alone STARS training course will be developed. The Navy will require the establishment of a new NEC for STARS maintenance technicians. MATC technicians (MOS 5953) will receive training at the Navy schools. No new or additional MOS will be assigned. Depot maintenance will include repair of failed line replaceable units and other maintenance actions not performed at the organizational level.

NATTC Pensacola will require two additional ET Instructor billets to conduct the AN/FSQ-204 STARS maintenance training. No other increase to existing Navy or Marine Corps manpower is anticipated at this time to operate or maintain STARS.

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LIST OF ACRONYMS

AC	Air Traffic Controller
AMD	Activity Manning Document
ARATC	Advanced Radar Air Traffic Control
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
COTS	Commercial Off-The-Shelf
CRT	Cathode Ray Tube
CY	Calendar Year
DAIR	Direct Altitude and Identity Readout
DASR	Digital Airport Surveillance Radar
DoD	Department of Defense
DT	Developmental Test
DT&E	Developmental Test and Evaluation
ES	Emergency Service
ESL	Emergency Service Level
ET	Electronics Technician
ETMS	Enhanced Traffic Management System
ETVS	Enhanced Terminal Voice Switch
FAA	Federal Aviation Administration
FAAAC	Federal Aviation Administration Aeronautical Center
FS	Full Service
FSL	Full Service Level
GB DAT	Gigabit Digital Audio Tape
GB DLT	Gigabit Digital Linear Tape
GEMD	Ground Electronics Maintenance Division
GPW	General Purpose Workstation
LAN	Local Area Network
LRU	Line Replaceable Units
MACS	Marine Air Control Squadron
MATC	Marine Corps Air Traffic Control
MCW	Monitor and Control Workstation
MCAS	Marine Corps Air Station

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LIST OF ACRONYMS

MOS	Military Occupational Specialty
NAS	Naval Air Station
NATTC	Naval Air Technical Training Center
NAVICP	Naval Inventory Control Point
NAWC	Naval Air Warfare Center
NEC	Navy Enlisted Classification
NTSP	Navy Training System Plan
OJT	On-the-Job Training
ORD	Operational Requirements Document
OSF	Operational Support Facility
OT	Operational Test
OT&E	Operational Test and Evaluation
P^3I	Pre-Planned Product Improvement
RATCF	Radar Air Traffic Control Facility
SPAWARSYSCEN	Space and Naval Warfare Systems Center
SSS	Site Support Server
STARS	Standard Terminal Automation Replacement System
TATCF	Transportable Air Traffic Control Facility
TBD	To Be Determined
TCW	Terminal Controller Workstation
TD	Training Device
TPC	Tower Position Console
TRACON	Terminal Radar Approach Control
TTE	Technical Training Equipment
VIDS	Visual Information Display System
WJHTC	William J. Hughes Technical Center

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STANDARD TERMINAL AUTOMATION REPLACEMENT SYSTEM

PREFACE

This Initial Navy Training System Plan (NTSP) is an early look at the Standard Terminal Automation Replacement System (STARS) program. This is the second iteration of the Initial NTSP for STARS, updating the October 1999 version. It is designed to explore the various employment alternatives currently under consideration. Since it is the Initial NTSP and a joint Federal Aviation Administration (FAA) and the Department of Defense (DoD) acquisition process, some definitive data was unavailable or undefined for inclusion in this version.

This Initial NTSP is a product of the Training Planning Process Methodology. It is intended for use as a planning document to provide manpower, personnel, and training requirement summaries for operating and maintaining the STARS.

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PART I - TECHNICAL PROGRAM DATA

A. TITLE-NOMENCLATURE-PROGRAM

1. Title-Nomenclature-Acronym. AN/FSQ-204 Standard Terminal Automation Replacement System (STARS).

2. Program Element. NA

B. SECURITY CLASSIFICATION

1. System Characteristics ..... Unclassified
2. Capabilities ..... Unclassified
3. Functions..... Unclassified

C. MANPOWER, PERSONNEL, AND TRAINING PRINCIPALS

OPNAV Principal Official (OPO) Program Sponsor ..... CNO (N885F)

OPO Resource Sponsor ..... CNO (N885F)

Developing Agency (DA) ..... NAVAIRSYSCOM (PMA213)

Training Agency (TA) ..... CINCLANTFLT
CINCPACFLT
CNET
COMNAVAIRESFOR

Training Support Agency (TSA) ..... NAVAIRSYSCOM (PMA205)

Manpower and Personnel (M&P) Mission Sponsor ..... CNO (N122)
NAVPERSCOM (PERS-40)

Director of Naval Training ..... CNO (N7)

Marine Corps Force Structure..... MCCDC (C53)

D. SYSTEM DESCRIPTION

1. Operational Uses. The FAA and DoD Terminal Radar Approach Control (TRACON) facilities must, within their delegated airspace, provide Air Traffic Control (ATC) services to users in accordance with all applicable governing rules and documents. These services include the

separation and sequencing of arrivals, departures, and over-flights in and around an airport or number of airports within their airspace.

AN/FSQ-204 STARS will replace the AN/TPX-42(V)5 Basic Direct Altitude and Identity Readout (DAIR) and the AN/TPX-42(V)10 Radar Air Traffic Control Facility (RATCF) DAIR at Navy and Marine Corps ATC facilities as well as at the ATC schools located at the Naval Air Technical Training Center (NATTC) Pensacola, Florida.

STARS is a fully digital system capable of displaying all aircraft using FAA and DoD surveillance systems within their defined airspace. STARS has the platform needed to facilitate increased and enhanced levels of ATC automation at FAA and DoD terminal ATC facilities. Situation displays present aircraft position status, predicated on single and multi-sensor inputs. STARS displays non-tracking flight data and other information in logical areas while not interfering with presentation of the aircraft data. Its functions include improved weather display, improved surveillance through system upgrades, and establishment of new system interfaces. Additional benefits are achieved with a program of Pre-Planned Product Improvements (P^3I) resulting in implementation of capabilities such as datalink communications.

STARS will provide the coordination and data display functions required by both TRACON and tower ATC personnel. STARS will be used to effect both inter- and intra-facility radar handoffs. STARS data display will include aircraft positional data, aircraft status, flight plan information, and general information. STARS will continue to provide safety functions such as the Conflict Alert (CA), Mode-C Intruder (MCI), and Minimum Safe Altitude Warning (MSAW). STARS also supports controller training. Supervisory and traffic management specialists will use STARS for operational oversight to support real-time air traffic decision-making.

STARS will safeguard ATC operations by providing an Emergency Service Level (ESL) feature in the event of a Full Service Level (FSL) system failure. ESL will provide the controller with surveillance position information, sensor identification, aircraft beacon code, filters, altitude, maps, range marks, and weather information. In addition, multi-sensor tracking will provide expanded and redundant radar coverage.

2. Foreign Military Sales. No Foreign Military Sales are planned at this time.

E. DEVELOPMENTAL TEST AND OPERATIONAL TEST. The FAA and DoD are conducting Full Service System Acceptance Test at the Raytheon Marlborough Plant and ESL testing at the William J. Hughes Technical Center (WJHTC) Atlantic City, New Jersey. DoD is conducting System Acceptance Testing on the ESL of STARS. Developmental Test and Evaluation (DT&E) was performed at Eglin Air Force Base, Florida, on November 1999 through January 2000. Currently, the Developmental Test (DT) and Operational Test (OT) are being performed until March 2000. Multi-organization Operational Test and Evaluation (OT&E) is scheduled for 31 July 2000 through 28 November 2000.

F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. STARS is being procured jointly by the FAA and DoD. It will replace the AN/TPX-42(V)5 DAIR system,

the AN/TPX-42(V)10 RATCF DAIR system, the FA-8970 Analog Video Mapper, the OD-58 and OD-152 Radar Indicators, and the AN/UYX-1 Bright Radar Alpha Numeric Display System.

G. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. STARS will provide a system that maximizes the use of Commercial Off-The-Shelf (COTS) items and Non-Developmental Items (NDI). STARS will provide a fully digital, fault tolerant, high availability system to support essential FAA and DoD ATC services. STARS is equipped with a single scaleable hardware and software system for all terminal facilities, plus an expandable and extensible platform to support future workloads. User benefit programs are also provided. STARS will improve the efficiency of controllers and maintenance technicians.

a. Radar Data Processor. The Radar Data Processor (RDP) has two redundant processors (one on-line and one hot standby) mounted in the equipment room rack and interfaced to FSL Local Area Networks (LAN). The processor size depends on the number of radar systems: Sun Ultra 1 Model 170 for 0-3 radar systems (small), Sun Ultra 1 Model 200E for 4-13 radar systems (medium), and Sun Ultra 2 Model 1300 for 14-16 radar systems (large). System software handles radar data inputs, processes flight data, and maintains and monitors system tracks.

b. Terminal Controller Workstation. The Terminal Controller Workstation (TCW) consists of one Full Service (FS) Display Processor, one Emergency Service (ES) Display Processor, and one Display Controller-Server mounted in the TCW Console. The ES Display Processor and Controller-Server is the Sun Ultra 1 Model 170. The FS Display Processor depends on the number of radar systems: Sun Ultra 1 Model 170 for 0-3 radar systems (small), Sun Ultra 1 Model 200 for 4-8 radar systems (medium), and Sun Ultra 2 Model 1300 for 9-16 radar systems (large).

c. Tower Display Workstation. The Tower Display Workstation consists of one FS Display Processor, one ES Display Processor and one Display Controller-Server mounted in the tower equipment room rack. The ES Display and Controller-Server is the Sun Ultra 1 Model 170E. The FS Display Processor depends on the number of radar systems: Sun Ultra 1 Model 170 for 0-8 radar systems (small) and Sun Ultra 1 Model 200E for 9-16 radar systems (large). Interface to remote towers (greater than 5,000 feet from parent facility) via two or four Government-Furnished Equipment lines.

d. Monitor and Control Workstation. The Monitor and Control Workstation (MCW) consists of one FS Display Processor, one ES Display Processor, and one Display Server mounted in the MCW computer table in the equipment room. All processors are Sun Ultra 1 Model 200E. The MCW has one standard 21-inch 1024 x 1280 Cathode Ray Tube (CRT) display. The MCW provides control and monitoring display for control system operation, system status display and/or update, system message display, and control playback of recorded system data.

e. General Purpose Workstation. The General Purpose Workstation (GPW) consists of one Sun Ultra 1 Model 170 with integrated graphics controller, one standard 21-inch 1024 x 1280 CRT display, and a Pseudo-pilot GPW for Pseudo-pilot position assigned training scenario flights to control in response to trainee position controller directions. Contract quantities provide for one Pseudo-pilot for each training TCW.

f. Test and Training Simulator. The Test and Training Simulator consists of the Sun Ultra 1 Model 200E, and communicates with Pseudo-pilot GPWs via the supporting LAN. The Simulator creates simulated system inputs from scenario generation tools for use by FSL and ESL to aid in certification, test, and training of controllers. The Simulator has optional voice recognition and synthesis capability.

g. Site Support Server. The Site Support Server (SSS) consists of the Sun Ultra 1 Model 200E with archival tape storage. Sites with less than three radar systems will have five Gigabit Digital Audio Tape (GB DAT), and sites with three or more radar systems will have 30 Gigabit Digital Linear Tape (GB DLT). SSS provides storage of Site Adaptation Data Files.

h. Data Recording Equipment. The Data Recording Equipment (DRE) has two redundant Sun Ultra 1 Model 200E processors (one on-line and one hot standby), each with two tape drives. Each tape drive can record at least 24 hours of system data. Sites with less than three radar systems will have five GB DAT and sites with three or more radar systems will have 30 GB DLT.

i. Peripheral Equipment

(1) Printer. The printer is the HP LaserJet 4MV, 16ppm, and 600dpi.

(2) Equipment Racks. Equipment racks come in two sizes, 6-foot and 3.5-foot racks. They are made of steel with a Plexiglas front door, and include a steel rear-access door. They are equipped with two independent AC power feeds with Power Conditioning Units (PCU). The six-foot rack dimensions are 73.62” H x 22.56” W x 31.56” D for the full service rack assembly and the local tower processor rack assembly. The 3.5-foot rack dimensions are 43.87” H x 22.56” W x 31.56” D for the workstation hub rack assembly, and the remote tower processor and automation rack assembly.

j. Communications Gateway Equipment. The Communications Gateway Equipment (CGE) has dual redundant Sun Ultra 1 Model 170 processors (two each for ESL and FSL). Modem Sharing Units (MSU) split Air Route Traffic Control Center (ARTCC), Enhanced Traffic Management System (ETMS), and radar inputs for redundant ESL and FSL equipment (radar only for ESL). Processing includes Radar and ARTCC message validation and processing, Radar data rho-theta filtering, and multi-scan radar correlation.

k. Network Equipment. Network equipment utilizes Ethernet LAN (both 100 and 10 Mbps) over twisted pair and/or fiber optics, plus a combination of switches, hubs, and routers. Units are stackable; the modular design allows for addition of components for specific site configurations. The units act as Server Network Management Protocol agents reporting to STARS monitor and control. Firewalls and routers provide network security.

2. Physical Description. The physical size of each component is not available at this time. However, all equipment will fit within the two different size equipment racks provided. Space and Naval Warfare Systems Center (SPAWARSYSCEN), Charleston, South Carolina, conducted a site survey of the schoolhouse at NATTC Pensacola during FY99 to determine the physical constraints associated with the classroom and lab space to be used for the STARS maintenance course. The results are not yet available.

3. New Development Introduction. The STARS system was introduced to the DoD at Eglin AFB in March 1998. The first Navy and Marine Corps site that received STARS was the Naval Air Warfare Center (NAWC)-Operational Support Facility (OSF), St. Inigoes, Maryland, in December 1999 (delivery). Installation is occurring from January through March 2000.

4. Significant Interfaces. The most significant interface with the STARS program is the P^3I that includes:

- Data Link
- Center-TRACON Automation Systems/Final Approach Spacing Tool (CTAS/FAST)
- Automatic Dependent Surveillance-Broadcast (ADS-B)
- ETMS Interactive
- Airport Movement Area Safety/Airport Surface Traffic Automation-Airport Surface Target Identification System (AMASS/ASTA-ATIDS)
- Improved Weather Display
- Precision Run Monitor
- Safety Enhancements
- Supplemental Flight Data Processing

In addition, STARS will interface with the AN/ASR-11 Digital Airport Surveillance Radar (DASR) and the AN/FSC-127 Enhanced Terminal Voice Switch (ETVS) systems.

5. New Features, Configurations, or Material. NA

H. CONCEPTS

1. Operational Concept. Navy and Marine Corps Air Traffic Controllers will operate STARS. STARS will provide full ATC operational functionality identical to that of the displays currently used in ATC facilities. The general roles and responsibilities of ATC personnel will remain unchanged with the deployment of STARS. STARS will be used to display primary and secondary radar targets, provide weather advisory services, and navigational assistance to user aircraft.

2. Maintenance Concept. Maintenance of STARS equipment will be performed at the organizational and depot levels. Navy personnel in the Electronics Technicians (ET) rating,

Marine Corps Air Traffic Control (MATC) technicians or civilian Ground Electronics Maintenance Division (GEMD) technicians at Navy and Marine Corps facilities will perform maintenance. NAWC-OSF, St. Inigoes, Maryland, will serve as the Navy's trouble desk. It will have the capability to answer fleet calls and provide fixes via email, telephone, and through direct support via the Wide Area Network interface. The team of civilians will travel when required to repair complex problems. The FAA is currently reviewing various maintenance alternatives associated with existing COTS equipment. The selected maintenance level will be predicated on the COTS equipment development process currently under review, such as development of the maintenance concept, maintenance levels, support equipment, technical data, etc.

a. Organizational. General site maintenance at the organizational level involves the removal and replacement of the Line Replaceable Units (LRU). STARS also supports the remote centralized support concept and the capability for remote operational system maintenance. Maintenance technicians at the local ATC facility will perform system hardware maintenance. The responsibility for software maintenance is uncertain; however, this responsibility may fall upon the maintenance technicians. NATTC Pensacola will provide basic software maintenance training to maintenance personnel.

(1) Preventive Maintenance. Maintenance personnel will utilize the MCW to monitor the status, integrity, and performance of system resources and to control startup, shutdown, and restart of the system. Preventive maintenance will not interfere with STARS operation. The FAA envisions that the preventive maintenance of Sony monitors will involve a quarterly alignment.

(2) Corrective Maintenance. Maintenance personnel will be able to detect system problems via the MCW position, by visual observation, or through manual interaction with the system. The technician will conduct fault diagnostics, fault isolation, hardware and software configuration management, software download and cutover, and certification of system operations. Faulty LRUs will be forwarded to the appropriate depot level facility for repair. The Sony monitor will be repaired at the local facility. A spares kit will be available for replacement of faulty circuit cards on site.

b. Intermediate. NA

c. Depot. Details are To Be Determined (TBD). Many COTS equipment packages do not support a traditional depot maintenance philosophy, but instead use a remove, replace, and discard or remanufacture approach. The FAA will perform the life-cycle cost study and the maintenance analysis to determine whether or not depot maintenance is appropriate for STARS. Raytheon will provide hardware support until the FAA activates a depot for STARS. SPAWARSYSCEN Charleston is the Fleet Support Team lead for the Navy. Additional details for depot level maintenance will be forthcoming.

d. Interim Maintenance. TBD

e. Life-Cycle Maintenance Plan. The FAA is conducting the life-cycle cost and maintenance analysis study.

3. Manning Concept. AN/FSQ-204 STARS will replace AN/TPX-42(V)5 Basic DAIR and AN/TPX-42(V)10 RATCF DAIR at Navy and Marine Corps ATC facilities. Air Traffic Controller staffing will not change as a result of STARS. In addition, STARS will not change staffing within the GEMD, but the complexity of STARS will necessitate one STARS maintenance technician per shift during ATC Facility operation hours. The Navy OSF will be manned by the current staff at St. Inigoes with no manning increase planned at this time.

a. Estimated Maintenance Man-Hours per Operating Hour. It is estimated that the Mean Time To Restore STARS will be no more than 0.5 hours. The minimum acceptable Mean Time Between Failure is 5000 hours and the minimum Mean Time Between Critical Failures will be no less than 50,000 hours. Repair time for any system failure should not exceed six hours or the equipment will be replaced.

b. Proposed Utilization. STARS utilization will be the same as the systems being replaced. Utilization requirements are for 24 hours of continuous operation, seven days a week, and capable of containing activity schedules on a daily, weekly, and monthly basis. STARS will track use of all continental United States military airspace by area, type, and user.

c. Recommended Qualitative and Quantitative Manpower Requirements

(1) Officer. Manning at the officer level will not be affected by installation of the STARS.

(2) Enlisted. Manning of the ATC facilities and GEMDs will remain the same as reflected in the Activity Manning Document (AMD) established for each ATC facility. Current AN/TPX-42(V)5 and AN/TPX-42(V)10 systems are maintained by Navy ETs with Navy Enlisted Classification (NEC) codes 1574 and 1578, Marine Corps MATC technicians with Military Occupational Specialty (MOS) 5953, and civilian GEMD technicians. Due to the complexity of STARS from a maintenance standpoint, a new ET NEC 15XX will be established. Prior to system installations, Navy Activity Claimants must initiate action to modify AMD NECs from 1574/1578 to ensure prospective gains receive the proper training en route. No new Air Traffic Controller (AC) NEC is required.

4. Training Concept. As Program Lead, the FAA will provide contract training services, equipment, and documentation. Formal skills training for Navy and Marine Corps Air Traffic Controllers will be conducted as part of the AC "A1" and Advanced Radar Air Traffic Control (ARATC) "C" school at NATTC Pensacola. Formal skill training for Navy and Marine Corps maintenance technicians (to include GEMD technicians) will be conducted as part of a new class "C" course at NATTC Pensacola.

a. Initial Training. DT&E training was conducted and completed by WJHTC in December 1997. These results will be used for the DoD DT report. OT&E training was conducted and completed in April 1998. In addition to DT&E and OT&E training, two training courses, one operator and one maintenance will be offered. These courses are limited and will be held at various FAA and DoD sites. Navy instructors, civil service personnel from

SPAWARSYSCEN Charleston, and contractor support personnel will most likely receive this training.

(1) Operator - STARS Air Traffic Control Operations Training. This course conducted at Federal Aviation Administration Aeronautical Center (FAAAC) in Oklahoma City, Oklahoma, or the contractor facility from March 1998 through September 2000, is a "Train-the-Trainer" course. It is 64 hours in length with 12 students per course. It is broken into two parts. First, students receive 40 hours of classroom and lab training to "Train-the-Trainer", and second, the students receive 20 hours of Computer-Based Instruction. An instructor's training package from this course will be used to update AC "A1" and ARATC "C" school curriculum.

(2) Maintenance - STARS Site Hardware Maintenance Training. This course was offered 10 times between June 1998 and October 1999 at FAAAC, Oklahoma City. Each class was 80 hours in length with a maximum of 12 students per class. The course provided the knowledge and skills required to operate, maintain, and support STARS. Training included physical and functional descriptions of hardware, theory of operation, normal system operation, system interfaces, site adaptation, fault isolation, and diagnostics.

b. Cadre Training. Initial Cadre Training for operators and maintenance personnel at the ATC facilities still has a few details to be worked out prior to fleet installation.

(1) Operator. Currently there is no requirement for formal training of fleet ATC operators. On-the-Job Training (OJT) will be given during installation of STARS at each facility.

(2) Maintenance. Navy and Marine Corps ATC facilities receiving STARS should ensure one or two maintenance technicians attend the formal maintenance course prior to installation. This maintenance course will be taught at NATTC Pensacola.

c. Follow-On Training. Current plans indicate two STARS will be in place for follow-on maintenance training at NATTC Pensacola beginning with the first system being installed in January 2001. Operators will use a simulator for "A" and "C" school training.

(1) Operator. NATTC Pensacola trains Navy and Marine Corps Air Traffic Controllers for the fleet. The current AC "A1" and ARATC "C" school curricula will require updating to include the STARS classroom and laboratory instructions. Training Device 15G31 Shore-based Radar ATC Training Systems (SATS) supporting AC "A1" and ARATC "C" laboratory instruction must be modified to replicate STARS operations. This modification should be completed when 50 percent of the Navy and Marine Corps STARS installation are complete. No new ATC NECs or MOSs are required.

The following ATC courses are available for Navy and Marine Corps operators. These courses will be modified and stand up when fleet ATC facilities are 50 percent operational with STARS.

Title	**Air Traffic Controller**
CIN	C-222-2010
Model Manager..	NATTC Pensacola
Description …….	This course provides Navy and Marine Corps personnel with control tower and radar knowledge to meet the FAA requirements for certification and technical knowledge and skills. It is followed by practical application performed under supervision at an ATC facility, to fulfill the technical requirements at the apprentice entry level for air traffic controllers.
Location	NATTC Pensacola
Length	80 days
RFT date	Currently available
Skill identifier	No NEC. Marine Corps personnel hold student MOS 7257.
TTE/TD	Training Device (TD) 15G31 must be modified to replicate STARS operations.
Prerequisites	° Must be medically fit per Standard Form 88 and NAVMED 6410/2 ° Marine Corps personnel must be eligible for a Secret Clearance.

Title	**Advanced Radar Air Traffic Control**
CIN	C-222-2022
Model Manager ..	NATTC Pensacola
Description	This course is a Class “C” school designed to provide Navy and Marine Corps journeyman-level Air Traffic Controllers with advanced instruction in terminal radar approach control procedures, including technical knowledge and practical application. Hands-on training is provided on arrival control, departure control, and approach control operation positions. This course provides the student with the training necessary to function effectively in a radar approach control facility. All students are required to demonstrate knowledge of procedures, phraseology, and equipment encountered in the typical approach control environment.
Location	NATTC Pensacola
Length	20 days

RFT date	Currently available
Skill identifier	AC NEC 6901, MOS 7257 or 7291
TTE/TD	TD 15G31 must be modified to replicate STARS operation.
Prerequisites	° C-222-2010, Air Traffic Controller ° Individual must possess a NAVMED 6410/2 Clearance. ° Security Clearance: None ° Marine Corps personnel must possess MOS 7251 and be eligible for a Secret Clearance.

(2) Maintainer. NATTC Pensacola trains Navy and Marine Corps ATC maintenance technicians for the fleet. Current AN/TPX-42(V)5 DAIR Maintenance Technician pipeline (CIN C-103-2052) and AN/TPX-42(V)10 RATCF DAIR Maintenance Technician pipeline (CIN C-103-2051) will be phased out as those systems are replaced by the AN/FSQ-204 STARS in the fleet. DAIR NEC 1574 and RATCF DAIR NEC 1578 will be replaced by a new STARS NEC 15XX. Marine Corps MATC technicians MOS 5953 will attend the STARS maintenance course at NATTC Pensacola as requirements dictate. No new MOS will be established. A new pipeline for STARS/DASR will stand-up to train maintenance technicians once fleet installation begins.

Title	**AN/FSQ-204 Standard Terminal Automation Replacement System Maintenance Course, Class C1**
CIN	C-103-XXXX
Model Manager ..	NATTC Pensacola
Description	This course provides theory and technical skills necessary to operate and perform preventive and corrective maintenance on the AN/FSQ-204 STARS.
Location	NATTC Pensacola
Length	40 days
RFT date	First quarter FY02
Skill identifier	None
TTE/TD	STARS and Visual Information Display System (VIDS) used as Technical Training Equipment (TTE)
Prerequisites	A-100-0140, ET Strand “A” School; or A-100-0138, ET Core A School; or C-103-2080, Marine Air Traffic Control Radar Technician pipeline; or service equivalent

Title	**AN/TPX-42(V)5 DAIR Maintenance Technician Pipeline**
CIN	C-103-2053
Model Manager ..	NATTC Pensacola
Description	This course provides training in the maintenance of the AN/TPX 42(V)5 DAIR system. This pipeline training consists of the following segment courses: ° C-103-2048, RD-379(V)/UHN Maintenance ° C-103-2028, AN/TPX-42A(V)5 DAIR Maintenance ° C-103-2045, ATC Maintenance Preparatory Course
Location	NATTC Pensacola
Length	87 days
RFT date	Currently available
Skill identifier	ET NEC 1574
TTE/TD	A DAIR system is used as TTE.
Prerequisites	A-100-0140, ET Strand "A" School or equivalent fleet experience

Title	**AN/TPX-42(V)10 RATCF DAIR Maintenance Technician Pipeline**
CIN	C-103-2051
Model Manager ..	NATTC Pensacola
Description	This course provides training in the maintenance of the AN/TPX-42A(V)10 RATCF DAIR System. This pipeline training consists of the following segment courses: ° C-103-2048, RD-379(V)/UHN Maintenance ° C-103-2035, AN/TPX-42A(V)10 RATCF DAIR Maintenance ° C-103-2045, ATC Maintenance Preparatory Course
Location	NATTC Pensacola
Length	100 days
RFT date	Currently available
Skill identifier	ET NEC 1578
TTE/TD	A RATCF system is used as TTE.

Prerequisites ..... A-100-0140, ET Strand "A" School or equivalent fleet experience

d. Student Profiles

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
ET 1574	° A-100-0140, ET Strand "A" School ° A-100-0138, ET Core "A" School
ET 1578	° A-100-0140, ET Strand "A" School ° A-100-0138, ET Core "A" School
MOS 7257	° C-222-2010, Air Traffic Controller
MOS 5953	° C-100-2020, Avionics Common Core Class A1 ° C-100-2019, Marine Air Traffic Control Basic Technician ° C-103-2026, Miniature Component Repair ° C-103-2080, Marine Air Traffic Control Radar Technician Pipeline ° C-103-2072, Marine Air Traffic Control Technician Common Core Course
Civilian or Government Service Employee	° NEC ET/MOS or service equivalent

e. Training Pipelines. Operator training will not require any new training pipelines. Maintenance training will require a maintenance training pipeline that combines STARS, DASR, and VIDS maintenance.

I. ONBOARD (IN-SERVICE) TRAINING

1. Proficiency or Other Training Organic to the New Development. With the introduction of STARS to the ATC facilities, operators and maintenance personnel will need to have a working knowledge of the UNIX operating system. Operators at the supervisory level must possess this knowledge to ensure proper operation of the system during normal day-to-day operations. Maintenance personnel will need to know UNIX commands to enable system troubleshooting and to perform diagnostic analysis when the need for maintenance arises.

2. Personnel Qualification Standards. Personnel Qualification Standards are not envisioned for AN/FSQ-204 STARS maintenance technicians nor for Air Traffic Controllers.

3. Other Onboard or In-service Training Packages. OJT will be used to maintain efficiency and to improve the knowledge of all personnel involved in the operation and

maintenance of STARS. OJT and proficiency training will be provided by an embedded computer training program (referred to as "AT Coach") built into the STARS terminal. GEMDs may establish locally developed Job Qualifications Requirements (JQR) to ensure maintenance technicians are trained on station-unique equipment configurations.

J. LOGISTICS SUPPORT

1. Manufacturer and Contract Numbers

CONTRACT NUMBER	MANUFACTURER	ADDRESS
DTFA01-96-D-03008	Raytheon Electronic Systems	1001 Boston Post Road Marlborough, MA 01752

2. Program Documentation. See paragraph M. below.

3. Technical Data Plan. Technical manuals will be delivered to each site when the equipment arrives for installation. Two sets of COTS manuals (paper and CD-ROM) with its supplements will be delivered. Manuals such as *Systems Operations and Maintenance* and *Computer Operator's Manual* are distributed by FAA/Operational Support Services. Operational Support Services develops and distributes maintenance handbooks to DoD. FAA Technical Instruction numbers will be assigned to the manuals (i.e., no military numbers). DoD will provide distribution addresses to Operational Support Services.

4. Test Sets, Tools, and Test Equipment. The FAA recommends all sites have a color analyzer for Sony displays. Most tests are built into the system (Sun OS, LAN equipment, etc.). These requirements are to be determined and can be updated in future updates to this NTSP.

5. Repair Parts. Details for supply support for DoD have not been determined at this time. The FAA sites will have spares kits on-hand. A material support date will be established and supply support will transition to the Naval Inventory Control Point (NAVICP), Philadelphia, Pennsylvania. NAVICP will work closely with FAA supply activities.

6. Human Systems Integration. The STARS operator interface will be designed to allow operators to perform their duties without increasing levels of workload and fatigue. The operator interface will provide efficient workload management through effective use of graphical displays, text displays, and presentation of system and task status information. System messages and displays presented to operators will be appropriate and relevant to operators' activities and knowledge levels. Specific Human Systems Integration information will be added to the follow-on NTSP during future updates, as information becomes available.

K. SCHEDULES

1. Schedule of Events. All Navy and Marine Corps ATC Facilities are considered medium in size. Each of the 46 sites identified below are authorized to receive one STARS, with the exception of NATTC Pensacola, which will receive two systems. Each system is funded one year prior to the installation date.

a. Installation and Delivery Schedules. STARS will be installed at each facility utilizing one of three methods of installation, as discussed in paragraph K.1.c. below. The schedule below is a list of the 46 funded sites.

LOCATION	DATE INSTALLED	TPC	COMMON CONSOLES	TOTAL
NAWC St. Inigoes (OSF)	CY2000	2	2	4
NATTC Pensacola	CY2001	1	9	10
NAS Norfolk	CY2001	2	7	9
NAS Norfolk (Helo)	CY2001	2	0	2
SPAWARSYSCEN	CY2001	2	5	7
MCAS Camp Pendleton	CY2001	2	9	11
NAS Willow Grove	CY2002	2	5	7
MCAS Kaneohe Bay	CY2002	2	7	9
NAS Oceana	CY2002	2	11	13
NAS Whidbey Island	CY2002	2	13	15
NAS Patuxent River	CY2002	2	12	14
MCAS Beaufort	CY2002	2	10	12
NALF San Clemente Island	CY2002	2	6	8
NAS Kingsville	CY2003	2	17	19
NALF Orange Grove	CY2003	2	0	2
NAS Pensacola	CY2003	2	10	12
NAS Whiting Field	CY2003	4	8	12
MCAS Cherry Point	CY2003	2	18	20
MCAS New River	CY2003	2	5	7
MCAS Iwakuni	CY2003	2	8	10
NAS Jacksonville	CY2004	2	7	9

LOCATION	DATE INSTALLED	TPC	COMMON CONSOLES	TOTAL
NAS New Orleans	CY2004	2	6	8
NAS Corpus Christi	CY2004	2	4	6
NAS Meridian	CY2004	2	0	2
NAS Lemoore	CY2004	4	15	19
MCAS Yuma	CY2004	2	12	14
NAS Fallon	CY2005	2	10	12
NAS North Island	CY2005	2	11	13
NOLF Imperial Beach	CY2005	2	0	2
NAWS Point Mugu	CY2005	2	6	8
NATTC Pensacola	CY2005	1	9	10
NAS JRB Fort Worth	CY2005	2	7	9
NAS Brunswick	CY2005	2	9	11
NAS Key West	CY2005	2	8	10
MCAS Miramar	CY2006	2	9	11
MCAS Futenma	CY2006	2	5	7
NAVSTA Mayport	CY2006	2	6	8
NS Roosevelt Roads	CY2006	2	7	9
MCAF Quantico	CY2006	2	6	8
NAVSTA Rota	CY2006	2	6	8
NAS Keflavik	CY2006	2	8	10
NAF El Centro	CY2007	2	0	2
PMRF Barking Sands	CY2007	2	0	2
NSF Diego Garcia	CY2007	2	0	2
NAVSTA Guantanamo Bay	CY2007	2	0	2
NAWS China Lake	CY2007	2	0	2

b. Ready For Operational Use Schedule. The STARS will be ready for operational use after successful installation, test, and certification by the installation crew. The air station ATC Operations Department will witness test and certification procedures where possible.

c. Time Required to Install at Operational Sites. Early STARS systems will be installed independently. STARS systems will be installed in conjunction with DASR systems beginning in calendar year (CY) 2002. Installing the two systems together eliminates disrupting facility operations more than once for each system installation. SPAWARSYSCEN Charleston estimates the installation process will take five months. This includes setting up temporary ATC facilities if required, installing STARS and DASR, and the initial test and check of the new systems. Installation at each site will be accomplished via one of three methods listed below:

(1) First method. The concurrent approach method involves the installation of replacement systems side-by-side with the existing operational equipment. This method allows the current ATC equipment to remain fully operational while the new equipment is being installed and tested. It requires sufficient floor space available for parallel equipment installation, sufficient power for existing and replacement equipment, and sufficient Heating, Ventilation, and Air Conditioning (HVAC) capacity for existing and replacement equipment. Upon successful installation, test, and certification of the new equipment the facility transitions over to the new system for operational use, and the old systems are removed.

(2) Second method. The Marine Air Control Squadron (MACS) approach can be used when the concurrent approach method is not feasible due to facility space limitations. The MACS unit deploys to the airfield being upgraded and sets up mobile ATC equipment. Once the MACS is operational, control of all ATC operations is transferred to the MACS, and the old equipment is shut down for removal and replacement. MACS requirements include six months advanced scheduling; ample telephone landline circuits available at the MACS site; and messing, berthing and transportation for MACS operators and maintainers. Requirements also include a letter of agreement between the MACS and Air Station/Air Operations, accurate field data in advance for the efficient setup and generation of video maps, and time for station controllers to train on MACS equipment and familiarize MACS controllers with local operations. Upon successful installation, test, and certification of the new equipment, the facility transitions over to the new system for operational use.

(3) Third method. The Transportable Air Traffic Control Facility (TATCF) Approach can be utilized when the concurrent approach is not technically feasible and no MACS unit is available. This approach involves the construction of mobile trailers with standard Navy ATC processing, display, communications control, and ancillary equipment. After the TATCF is set up, tested, and certified at an air station, control of the radar operations will be turned over to the TATCF and the old radar facility equipment will be removed and replaced with the new system. Requirements include construction of two sets of TATCF trailers, each with a full complement of standard Navy ATC systems, sitting close to the existing facility, with sufficient power for the trailers. The TATCF will interface with the existing Precision Approach Radar, Airport Surveillance Radar, radios, and telephone landline circuits. Following successful testing and certification of the new systems, control is transferred back to the new equipment in the RATCF and ATC Tower.

d. Foreign Military Sales and Other Source Delivery Schedule. NA

e. Technical Training Equipment and Training Device Delivery Schedule

(1) Maintenance Training. Two AN/FSQ-204 STARS systems will be delivered to NATTC Pensacola to support maintenance training. One system will be installed in CY01 and the second in CY05. Coordination between the NATTC Project manager and SPAWARSYSCEN Charleston is required for relocation of AN/FSC-104 ECS radio antennas to ensure proper maintenance course lab space for STARS equipment.

(2) Operator Training. Training Device 15G31 Shore-based Radar ATC Training Systems supporting AC "A1" laboratory and ARATC "C" laboratory instruction must be modified to replicate STARS operations. This modification will be developed by NAWC TSD Orlando, Florida, and be in place when 50 percent of the Navy and Marine Corps STARS installations are complete.

L. GOVERNMENT-FURNISHED EQUIPMENT AND CONTRACTOR-FURNISHED EQUIPMENT TRAINING REQUIREMENTS. NA

M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
STARS Phase II Operational Requirements Document (ORD)		Joint Program Office (JPO)	18 Jun 95
U. S. Department of Transportation FAA and DoD STARS Phase III (Final) ORD		JPO	30 May 96
Navy and Marine Corps ATC Facility Transition Plan		SPAWARSYSCOM Code-313	Dec 96
ETVS NTSP	N88-NTSP-A-50-9701/A	PMA205	Approved Apr 99
DASR Initial NTSP		PMA205	Feb 98
Integrated Logistics Support Plan		FAA	Draft Feb 98
AN/TPX-42A(V)5/10 NTSP	E-50-7005F	PMA205	Approved 6 Jan 94

APPENDIX A - POINTS OF CONTACT

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